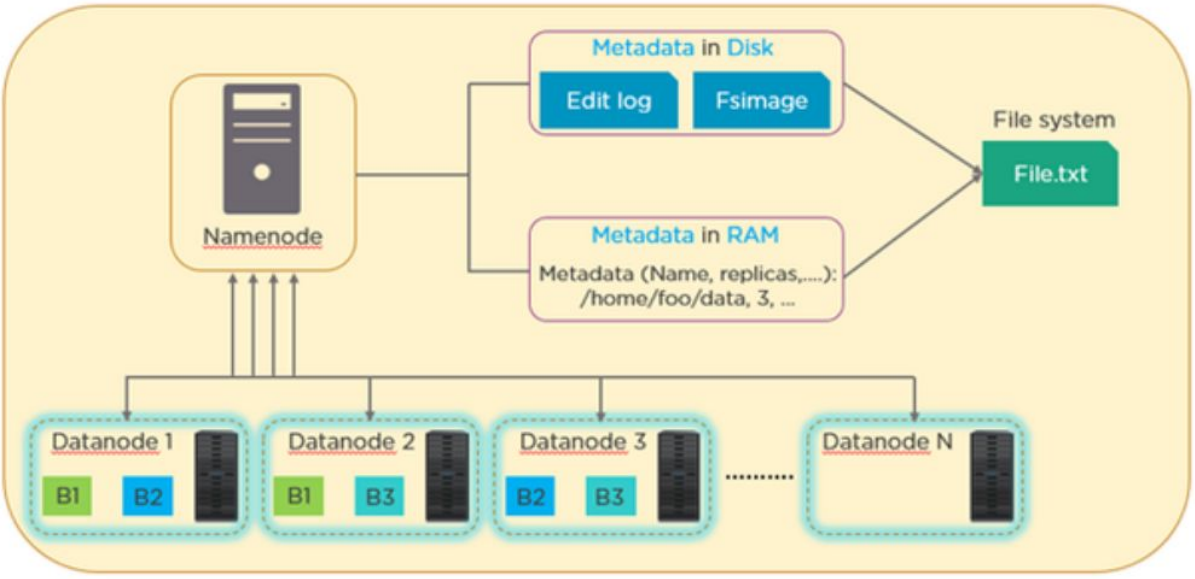
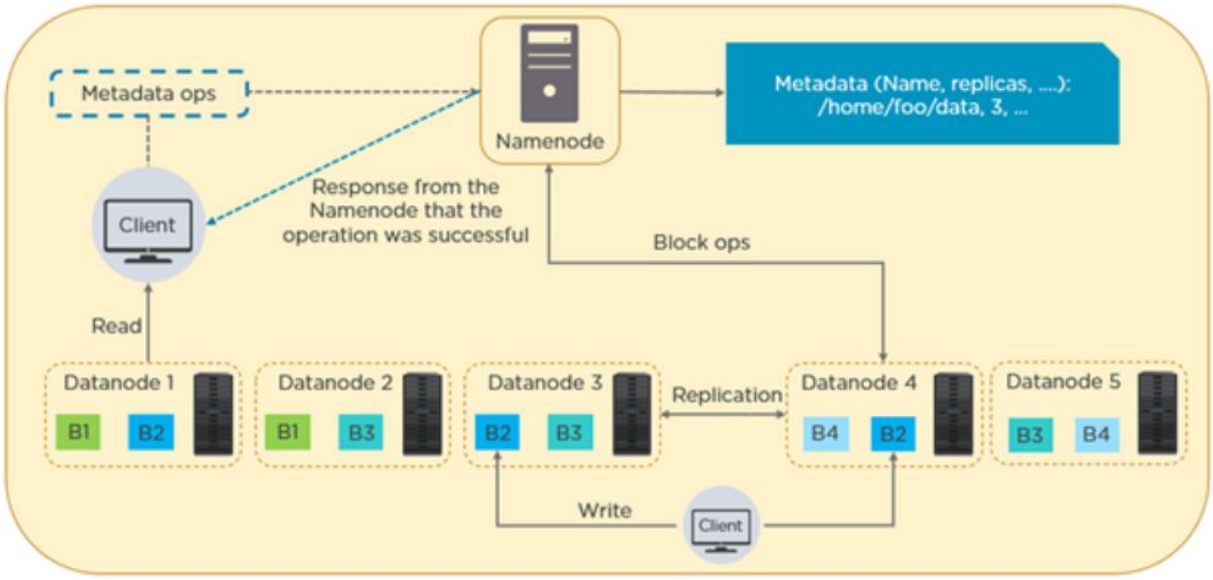
NameNode and DataNode in hadoop are two components of HDFS:

Namenode is the master server. In a non-high availability cluster, there can be only one Namenode. In a high availability cluster, 2 Namenodes are possible.

Namenode holds metadata information about the various Datanodes, their location, the size of each block, etc. It helps to execute file system namespace operations -
opening, closing, renaming files and directories.



Datanode is a miltiple instance server. There can be N number of datanode servers that stores and maintains the actual data. Datanodes send block reports to Namenode every 10 seconds. Datanode stores and retrieves the blocks when asked by the Namenode. It reads and writes the client's request and performs block creation, deletion, and replication on instruction from the Namenode.


Metadata ops
Namenode
Metadata (Name, replicas, ...):
/home/foo/data, 3, ...
Client
Response from the
Namenode that the
operation was successful
Block ops
Read
Datanode 1
B1
B2
Datanode 2
B1
B3
Datanode 3
B2
B3
Replication
Datanode 4
B4
B2
Datanode 5
B3
B4
Write
Client